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"The use of Electrochemistry and Ellipsometry for Identifying and Evaluating Corrosion on Aircraft"

Electrochemical corrosion testing using AC Impedance measurements, ellipsometry and X-Ray Photoelectron Spectroscopy (XPS) is progressing according to the Plan of Action and Milestones (POAM) submitted in July, 1994. The development of the corrosion sensor is on schedule and the feasibility study shows that the proposal to build the sensor is technically sound.

A detailed report dated August 15, 1994 was presented to the Program Manager explaining the theory of the AC Impedance, ellipsometry and XPS. The report also explained what the physical concept of the corrosion monitor is, and how it will respond to the various stages of corrosion. The preliminary data presented in the report showed the "signature" of the initial stages of corroding aircraft structures.

At the request of Major Thomas E. Erstfeld, the Program Manager, a progress report in presentation (viewgraph) format was mailed to him on September 14, 1994. Ten (10) viewgraphs describing the objectives, progress and future plans for the program along with a hard copy with color pictures were sent to Major Erstfeld by overnight delivery.

Data is being collected on aluminum 2024-T3 test samples with waterborne epoxy and epoxy polyamide samples. Gold and carbon conductive paints will be used as reference electrodes to establish the feasibility of easily obtaining AC impedance data on a coated aluminum surface.